

V(A). Planned Program (Summary)

Program # 6

1. Name of the Planned Program

Natural Resources and Environment

2. Brief summary about Planned Program

An increasing world population is placing greater demands on our natural resources. Public concern for a quality environment has increased as agriculture has become more complex and population pressures have increased. Natural resources must be conserved and their capacity maintained or improved in order to meet the needs of future generations. The long-term viability of agriculture and forestry production is tightly linked to proper use and protection of our soil, air and water resources. Impacts of urban horticulture on the environment are significant.

The Census of Agriculture reports decreasing numbers of mid- and large-sized farms and a significant increase in the number of small farms. Small acreage owners/operators frequently may not possess much agricultural or business knowledge. Extension will address the needs of small acreage producers and work with agricultural industry personnel and governmental agencies to assure that land managers and communities can evaluate a broad range of opportunities to enhance viability while respecting the environment.

AES and Extension programs address the growing competition for finite water, land, and air resources in a state with a growing human population by:

- educating agricultural and resource industry professionals;
- researching technical and economic issues related to improved resource utilization; and
- enhancing international competitiveness.

3. Program existence : Mature (More than five years)

4. Program duration : Long-Term (More than five years)

5. Expending formula funds or state-matching funds : Yes

6. Expending other than formula funds or state-matching funds : Yes

V(B). Program Knowledge Area(s)

1. Program Knowledge Areas and Percentage

KA Code	Knowledge Area	%1862 Extension	%1890 Extension	%1862 Research	%1890 Research
101	Appraisal of Soil Resources	5%		10%	
102	Soil, Plant, Water, Nutrient Relationships	5%		10%	
103	Management of Saline and Sodic Soils and Salinity	5%		10%	
104	Protect Soil from Harmful Effects of Natural Elements	5%		0%	
111	Conservation and Efficient Use of Water	10%		15%	
112	Watershed Protection and Management	5%		10%	
121	Management of Range Resources	5%		10%	
123	Management and Sustainability of Forest Resources	5%		10%	
124	Urban Forestry	5%		0%	
132	Weather and Climate	5%		10%	
133	Pollution Prevention and Mitigation	5%		0%	
136	Conservation of Biological Diversity	5%		0%	
204	Plant Product Quality and Utility (Preharvest)	5%		0%	
206	Basic Plant Biology	5%		0%	
211	Insects, Mites, and Other Arthropods Affecting Plants	5%		0%	
213	Weeds Affecting Plants	5%		0%	
403	Waste Disposal, Recycling, and Reuse	5%		10%	
601	Economics of Agricultural Production and Farm Management	5%		0%	
605	Natural Resource and Environmental Economics	5%		5%	
	Total	100%		100%	

V(C). Planned Program (Situation and Scope)

1. Situation and priorities

Development of management practices that are compatible with a high quality environment requires new methods of study that involve entire agroecosystems. Quantitative relationships between agriculture, natural resource use, and environmental quality must be defined. This will require a more thorough understanding of basic biological/ecological processes, as well as computer-aided systems management

research. Continuing to use natural resources to produce agricultural, range, and forestry products requires new multiple use strategies which are realistic in terms of biological, economic, social and environmental constraints. Transport and fate of pesticides, fertilizers, and other agricultural chemicals, as well as threatened and endangered species, biodiversity, habitat, wetlands, and water are all issues of concern. Knowledge must be developed to understand and evaluate competitive land use impacts and interactions on agricultural, range, and forest lands. This research provides the basis for developing agricultural and forestry management systems that are more compatible with conservation and environmental goals.

Water Resources

Adequate **supplies** of clean water are essential to the health and well being of Colorado citizens, agriculture, industry, wildlife and the economic vitality of the State. With shifting demographics, a growing population and a more integrated global economy, Colorado communities are increasingly faced with losing irrigated agriculture to growing municipal and industrial demands. Many residents and visitors to Colorado also value the state's recreational and environmental water uses putting additional pressure on the state's scarce water supply. **Amounts of water.**

Additionally there are a growing number of water **quality** concerns throughout the state. As diluting flows are not likely to become more abundant in the future and detection technology improves, threats to Colorado's snowmelt fed rivers, streams, and lakes should see increased scrutiny. **Number of impaired segments.**

Colorado water **policy** is an ever-evolving process that includes many institutions, agencies, corporations, and individuals. Understanding the subtleties and significance of water resource policy and the likely impact on local economies and quality of life is a growing need among the state's citizens.

Native Plant Education

Colorado is a dry state. According to the Colorado Climate Center, statewide average annual precipitation is only 17 inches. Sustainable landscapes using site-appropriate native plants can reduce the need for water and maintenance. A five year study of homes that converted non-native turf to water-efficient native and non-native plants in Las Vegas, Nevada found a 39 percent reduction in average summer monthly water use and a 33% reduction in maintenance costs in addition to the water savings. (Source: http://www.snwa.com/assets/pdf/about_reports_xeriscape.pdf Xeriscape Conversion Study, Sovocool, K. 2005.)

Native plants can also be beneficial because they are environmentally adapted, hardy, provide food and shelter for wildlife and maintain local biological diversity.

Invasive, non-native weeds are a concern in many communities and threaten native ecosystems. Management of invasive weeds is critical when maintaining a natural space or a landscaped yard and garden. About 42% of the species on the Threatened or Endangered Species lists are at risk primarily because of alien invasive species. Nonindigenous species in the United States cause major environmental damage and losses totaling approximately \$120 billion per year. (Source: <http://www.sciencedirect.com/science/article/pii/S0921800904003027> Update on the Environmental and Economic Costs Associated with Alien-Invasive Species in the United States, Pimentel et al., Feb. 2005.)

Noxious weeds are moving into valued ecosystems displacing natives at an alarming rate. Invasive plants are found on 133 million acres in the US (as big as California and New York combined), in federal, state, and private ownerships. Each year, invasive species advance by 1.7 million acres. (Source: <http://www.fs.fed.us/projects/four-threats/facts/invasive-species.shtml> Invasive Species. U.S. Forest Service, 2006.)

Environment Horticulture

Professional landscape management and homeowner gardening activities contribute significantly to the economy of Colorado. According to a study conducted by Colorado State University (Thilmany et al., 2008; <http://www.greenco.org/downloadables/GreenCO-ExecSumFinal08.pdf>), entitled "The Economic

Contribution of Colorado's Green Industry: A 2008 Update", Colorado household and business expenditures on garden, landscape and lawn products and services (including linkage industries such as irrigation systems, botanical gardens, lawn and garden equipment and maintenance services) have averaged almost 10% annual growth since 1993, for a 2007 total of \$1.8 billion. The \$1.8 billion directly contributed to the Colorado economy increases to \$3.3 billion when its impact on broader economic activity and employment generation in the Colorado economy is considered. The authors also found that, in 2007, the green industry provided Coloradans with over 35,000 jobs, an increase of 12,000 jobs since 1994 (tripling in size in less than 15 years), with \$1.2 billion in payroll (up \$750 million from 1994). The average green industry wage earned in 2007 increased to an average of \$35,318 annually, up from \$26,159 in 2001. It appears that the green industry has made an almost complete recovery from the drought restrictions and economic downturn in the early 2000s, but it is not yet clear how the industry will weather the current housing downturn. Colorado ranks 22nd of 50 states in its contribution to Gross Domestic Product (Hodges et al., 2011).

The quality of a landscape design and maintenance is a major factor in the home and property values. The average household in Colorado spends over \$1,000 annually on landscape care and gardening supplies (<http://www.greenco.org/images/downloadables/GreenCO-ExecSumFinal08.pdf>). Landscaping yields an average of a 109% return on every dollar spent, much more so than other home improvements. (<http://ellisonchair.tamu.edu/emphasis-areas/marketing-economics/economic-benefits-of-plants/>).

The primary issues addressed by Environmental Horticulture Extension include: ornamental landscapes, diagnostic services, small-scale food production, and volunteer engagement.

Emerging issues for consideration include:

Sustainable landscaping

"Green" gardening

Organic/natural landscape management

Composting/recycling

Water-wise/water smart gardens

Youth Gardening

Wildlife gardening (birds, butterflies)

Home greenhouses

Local food production

Community gardens and Neighborhood-Supported Agriculture (NSAs)

Community Supported Agriculture (CSAs)

Spanish speaking audiences

Ornamental Landscapes

The Environmental Horticulture Work Team puts statewide efforts into the Colorado Garden and Home Show. This event brings in Colorado residents from across the state and residents and vendors from 20+ states and Canada. The show's estimated annual economic impact on Denver is \$40 m

2. Scope of the Program

- In-State Extension
- In-State Research
- Multistate Research
- Multistate Extension
- Integrated Research and Extension
- Multistate Integrated Research and Extension

V(D). Planned Program (Assumptions and Goals)

1. Assumptions made for the Program

Colorado State is in the ideal geographic position to address irrigated agro-ecosystem level issues. Colorado has a wide diversity of water supply/management regimes that include ground water, diverse surface water management in five river systems, and various diversions of West Slope water. Faculty have an international reputation in agro-ecosystem modeling and soil carbon dynamics and associations with the NSF Long Term Ecological Research Short-Grass Prairie unit near Ault, the USDA-ARS Great Plains Systems Unit in Arkon, a five-university dryland agriculture research team, the modeling group at the Natural Resources Ecology Laboratory on campus, atmospheric sciences research programs at CU and CSU, the US Geological Survey, USDA-NRCS, USDA-ERS, a strong set of dryland cropping extension agents, and the dryland crops industries. Colorado State has field research laboratories at Walsh, Rocky Ford, Ft. Collins, Cortez, Center, Orchard Mesa, and Fruita capable of experimentation on cropping systems. State and grant funding will continue at current levels to provide facilities and support required to conduct an applied, field based research and outreach program.

Water Resources

Agriculture, industry, homeowners, water providers, and agencies in addition to other educational and research institutions look to Colorado State University Extension to provide research-based information and educational programs on water quality, water quantity, water policy, and other water resource issues. Extension is not the only institution with outreach expertise. Extensions value is in bringing the credibility and continuity of science based land grant institution.

Native Plant Education

Many residents, especially those new to Colorado, are unfamiliar with their state's local environmental conditions such as water availability, soils and elevation. Residents may find it difficult to select plants such as natives that are suited to these conditions with minimal supplemental irrigation.

Economic conditions have also created a strong demand for water-efficient plants such as natives that can save residents money. Alien invasive weeds are expanding in native habitats across the state and require increasing expenditures for control. Educational programs can provide research-based information on native plants suitable for sustainable landscaping and noxious weed management that will enable residents to make informed choices. Their choices can result in cost savings from reduced inputs such as water and maintenance and a positive impact on the environment through control of alien invasives that threaten native plant communities.

Environment Horticulture

Colorado State University Extension will collaborate with the entities making up the Green Industries of Colorado and professionals within the green industries, various state and federal government agencies and non-governmental organizations, and the gardening public in order to provide up-to-date, research based information for delivery horticultural programming for both rural and urban audiences.

Small Acreage

- With the proper education, tools, and skills, small acreage managers will become better stewards of their properties. They will enhance the sustainability of their parcels as well as their neighbors.
- They will see themselves as an interrelated system instead of a stand-alone entity, and understand that land is best managed as a collective whole because of the residual benefits received by all involved.
- With the knowledge and tools to maintain and manage their land properly, landowners will save substantial time and money.
- These practices will help maintain, or increase property values; control noxious weed spread; conserve water, land, and air quality; and provide continuity of landscape management.

2. Ultimate goal(s) of this Program

- Conduct natural resources research to develop agricultural and forestry management systems that are compatible with conservation and environmental goals and economically sustainable.
- Study the effects of climate and climate variation on plant, animal and microbial ecosystems to allow an assessment of the impacts of global change on agricultural and natural ecosystems.
- Develop and test technical, institutional, or social solutions to water quality and quantity problems in Colorado.
- Develop technologies for managing agricultural and municipal wastes.

- CMG Successful home gardening is fostered by supplying research-based information to the home gardener via the Colorado Master Gardener (CMG) program.
 - HORT Landscapes (trees, woody ornamentals, herbaceous ornamentals, food gardening, turfgrass, soil) are sustainably designed, installed and managed.
 - NPE 1: Colorado's natural and built landscapes become more sustainable.
 - NPE 2: The Colorado economy is healthy.
 - SAM 1. Water quality and quantity are protected in wells, local streams, and other water bodies.
 - SAM 2. Animals, livestock, and wildlife are managed in a sustainable way on small acreages.
 - SAM 3. Small acreage landowners are building healthy soils on their properties.
 - SAM 4. Pasture, range, crops, windbreaks, forests, and other plant communities are managed sustainably.
 - WR 1) Water Quality that is to the mutual benefit of all uses in Colorado: municipal, agricultural, industrial, recreational, and environmental
 - WR 2) Water Quantity that is to the mutual benefit of all uses in Colorado: municipal, agricultural, industrial, recreational, and environmental
 - WR 3) Water Policy and Education that is to the mutual benefit of all uses in Colorado: municipal, agricultural, industrial, recreational, and environmental

V(E). Planned Program (Inputs)

1. Estimated Number of professional FTE/SYs to be budgeted for this Program

Year	Extension		Research	
	1862	1890	1862	1890
2013	28.0	0.0	11.0	0.0
2014	30.0	0.0	11.0	0.0
2015	30.0	0.0	11.0	0.0
2016	0.0	0.0	11.0	0.0
2017	0.0	0.0	11.0	0.0

V(F). Planned Program (Activity)

1. Activity for the Program

- Conduct basic and applied research on environmental and natural resources issues.
- CMG EDUCATION Total hours of Continuing Education reported by all CMG volunteers

- CMG EDUCATION Number of Extension staff (agents, specialists, CMG program assistants) days spent HOSTING or FACILITATING CMG education
 - CMG EDUCATION Number of Extension staff (agents, specialists, CMG program assistants) days spent on CURRICULUM DEVELOPMENT and producing other educational products (websites, etc.) for the CMG program
 - CMG EDUCATION Number of Extension staff (agents, specialists, CMG program assistants) days spent TEACHING CMG volunteers (basic and continuing education)
 - CMG OUTREACH One-to-one contacts at the office and in the field - including one-to-one contacts by phone, office walk-ins, diagnostic clinic at the office, e-mails, Ask an Expert questions and house calls
- VOLUNTEER HOURS**
- CMG OUTREACH Apprentice CMG volunteers: total volunteer HOURS
 - CMG OUTREACH Circulation for newspapers/print media where CMG articles are published
 - CMG OUTREACH Continuing CMG Volunteers: NUMBER
 - CMG OUTREACH Continuing CMG Volunteers: Total volunteer HOURS
 - CMG OUTREACH Emeritus, limited activity, and affiliate CMG volunteers NUMBER OF
 - CMG OUTREACH Estimate PERCENTAGE (%) of total CMG contacts that served minority or underserved (as defined for your county) clientele
 - CMG OUTREACH Food Banks - If your CMG program works with directly or indirectly with local food banks, please record the pounds of fresh produce donated.
 - CMG OUTREACH Number of Apprentice CMGs employed in the Green Industry (information found on CMG application)
 - CMG OUTREACH Number of Fact Sheets, PlantTalk and CMG GardenNotes distributed by CMG volunteers
 - CMG OUTREACH TOTAL VOLUNTEER CONTACTS for all CMG activities
 - CMG OUTREACH TOTAL VOLUNTEER HOURS for all CMG volunteer activities
 - CMG OUTREACH Newsletters - number mailed or emailed
 - CMG OUTREACH Website/BLOGS maintained by CMG volunteers - hours spent developing and in maintenance
 - CMG OUTREACH Website/BLOGS maintained by CMG volunteers - number of hits
 - CMG OUTREACH Information booths and clinics (one-to-one and small group contacts in an public setting) - including clinics at nurseries, garden shows (including Colorado Garden Show, and Home and Patio Show), farmers' markets, county fairs, state fairs, and other events where CMGs staff an informational booth. NUMBER OF CONTACTS
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- CMG OUTREACH Community Greening and Gardening Projects - including all activities where Master Gardeners are assisting with community gardening projects, community greening projects, or other hands-on gardening activities, i.e., where the Master Gardeners is assisting in actual hands-on gardening projects. Includes demonstration gardens and research plots. (For example, Arbor Day projects, Children's Hospital Garden, community gardens, Earth Day project, Habitat for Humanity, Hudson gardens, jail gardens, Loveland youth garden project, nature centers, PERC Gardens, Praying Hands Ranch, Pueblo Zoo, school garden project, tree plantings, and Victim's Outreach garden) NUMBER OF CONTACTS

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- CMG OUTREACH Number of apprentice CMG volunteers
- CMG OUTREACH Number of Colorado Gardener Certificate, CGC students
- CMG OUTREACH Print Media - CMG-written newspaper, magazine, and newsletter articles

NUMBER WRITTEN

- CMG OUTREACH Print Media - CMG-written newspaper, magazine, and newsletter articles

VOLUNTEER HOURS spent developing/writing

- CMG OUTREACH Support of CMG Program - including advisory boards, CMG committee meetings (not related to specific projects) office filing and assistance, and other behind the scenes work that does not directly contact the public. VOLUNTEER HOURS

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- CMG OUTREACH Radio and TV - number of programs, show or appearances by CMG volunteers
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ESTIMATED AUDIENCE

- CMG OUTREACH Radio and TV programs, show1 or appearances by CMG volunteers

VOLUNTEER HOURS SPENT

- CMG VOLUNTEER MGT Agent/specialist/program coordinator/Extension staff days spent on CMG volunteer and program management

- CMG Youth - All outreach activities specifically targeting a youth audience NUMBER OF CMG

VOLUNTEERS INVOLVED IN YOUTH PROJECTS

- CMG Youth - All outreach activities specifically targeting a youth audience NUMBER OF YOUTH CONTACTS

- CMG Youth - All outreach activities specifically targeting a youth audience VOLUNTEER HOURS DEVOTED TO YOUTH PROJECTS

- CMG Youth - Number of youth gardening projects that received assistance from CMG volunteers (including 4-H, K-12 and any other youth programs/organizations)

- HORT FM - Farmers' Market administration - agent hours
- HORT FM - Farmers' Market administration - FM coordinator and other Extension staff (hours)
- HORT FM - Farmers' Market estimated attendance
- HORT FM - Farmers' Market gross sales (\$)
- HORT FM - Farmers' Market number of participating vendors
- HORT FM - Farmers' Market-specific volunteer hours (OK if these have also been included in TOTAL

CMG VOLUNTEER HOURS - don't worry about double-counting!)

- HORT Telephone, e-mail, other electronic communication
- HORT Demonstration garden management (total agent/coordinator/volunteer DAYS invested)
- HORT Demonstration gardens built/maintained (Plant Select, High and Dry, Xeriscape, etc)

NUMBER OF GARDENS

- HORT eXtension - Ask an Expert (estimated time spent responding to questions in HOURS)
- HORT Extension Fact Sheets, CMG Notes, PlantTalk Colorado scripts written; other writing for CSU Extension (number)
- HORT Newspaper, magazine, newsletter articles, blogs written (number)
- HORT Presentations, Trainings, Classes, Workshops, Webinars, Updates, Field Days given/taught (but NOT CO Master Gardener)
- HORT Presentations, Trainings, Classes, Workshops, Webinars, Updates, Field Days given/taught (but NOT CO Master Gardener) including participation and planning in events that are partnerships such as symposiums, conferences, garden walks, etc.
- HORT User fees generated (Lawncheck, Tree Team, other fee generation/income) DOLLARS GENERATED
- HORT Websites, blogs developed and maintained - number of hits
- HORT Websites, blogs maintained (number)
- NPE-1 No. of NPM Certification Courses (1 course = 3 sessions totaling approx 12.5 contact hrs.)
- NPE-10 External Grant Dollars
- NPE-11 User Fees (gross \$ collected from NPM courses and classes, material sales etc.)
- NPE-12 No. of Agencies Partnering/Collaborating (specify)
- NP

2. Type(s) of methods to be used to reach direct and indirect contacts

Extension

Direct Methods	Indirect Methods
<ul style="list-style-type: none"> • Education Class • Workshop • Group Discussion • One-on-One Intervention • Demonstrations • Other 1 (Field Days) 	<ul style="list-style-type: none"> • Public Service Announcement • Newsletters • Web sites other than eXtension • Other 1 (Radio spots)

3. Description of targeted audience

Individual agricultural producers, landowners, commodity groups, regulatory agencies, agribusinesses, and local, state, and federal land management agencies.

V(G). Planned Program (Outputs)

NIFA no longer requires you to report target numbers for standard output measures in the Plan of Work. However, all institutions will report actual numbers for standard output measures in the Annual Report of Accomplishments and Results. The standard outputs for which you must continue to collect data are:

- Number of contacts
 - Direct Adult Contacts
 - Indirect Adult Contacts
 - Direct Youth Contacts
 - Indirect Youth Contact
 - Number of patents submitted
 - Number of peer reviewed publications
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(H). State Defined Outputs

1. Output Measure

- CMG OUTREACH: Apprentice CMG volunteers: total volunteer HOURS
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- HORT: Extension Fact Sheets, CMG Notes, PlantTalk Colorado scripts written; other writing for CSU Extension (number)
- HORT Newspaper, magazine, newsletter articles, blogs written (number)

- HORT: Presentations, Trainings, Classes, Workshops, Webinars, Updates, Field Days given/taught (but NOT CO Master Gardener)
- HORT: Presentations, Trainings, Classes, Workshops, Webinars, Updates, Field Days given/taught (but NOT CO Master Gardener) including participation and planning in events that are partnerships such a symposiums, conferences, garden walks, etc.
- HORT: User fees generated (Lawncheck, Tree Team, other fee generation/income) DOLLARS GENERATED
- HORT: Websites, blogs developed and maintained, number of hits
- HORT: Websites, blogs maintained (number)
- NPE-1: Number of NPM Certification Courses (1 course = 3 sessions totaling approx 12.5 contact hrs.)
- NPE-10: External Grant Dollars
- NPE-11: User Fees (gross \$ collected from NPM courses and classes, material sales etc.)
- NPE-12: No. of Agencies Partnering/Collaborating (specify)
- NPE-13: No. of Newsletters (This is no. of newsletters, not number mailed or number of Coloradoans who received them.)
- NPE-14: No. of locally hosted Websites in support of this Plan of Work (enter no. of hits as participants.)
- NPE-15: Number of NPM media-related items published or aired that are educational in nature such as newspaper articles, blogs, radio or television interviews. (This is the no. of publications etc., not the circulation, listenership or viewership.)
- NPE-2: No. of NPM Special Classes (such as basic botany, native plant landscaping, weed management etc. that support NPM courses)
- NPE-3: No. of Trainings for NPM Volunteers
- NPE-4: No. of Trainings for Extension Staff
- NPE-5: No. of NPM Volunteers (total)
- NPE-6: No. of Certified Native Plant Master Volunteers in good standing (of those above in #5)
- NPE-7: No. of Volunteer Trainers that teach NPM courses/classes to public (of those above in #5)
- NPE-8: No. of Adult Educational Contacts made by Volunteers/Agents
- NPE-9: No. of Youth Educational Contacts made by Volunteers/Agents
- Number of different agencies you partnered with in this program effort. Include employers/agencies of NPM volunteers and any other collaborating agencies which cosponsor NPM in your county.

- Number of volunteer trainings conducted for volunteer NPM trainers
- Number of web hits for individual water-related fact sheets
- SAM 1. Trainings/Classes/Workshops, Field Days, Activity Days (Including all Workshops, Educational Classes, webinars, demonstrations)
- SAM 10. Volunteers (total) in Planned Program
- SAM 11. External Grant Dollars
- SAM 12. User Fees
- SAM 13. Agencies Partnering/Collaborating (specify) NRCS, County Weed Divisions, CO State Forest Service
- SAM 14. The number of acres on which small acreage landowners have established a weed management and monitoring plan and/or have reported active management of noxious/ unwanted weeds. (includes workshops, classes, demonstrations, one-on-one intervention, and webinars, etc).
- SAM 15. The number of acres on which small acreage landowners have successful grass establishment.
- SAM 16. The number of acres on which small acreage landowners have established proper grazing and pasture management.
- SAM 17. The number of acres on which small acreage landowners are implementing a forest management plan which includes insect/disease issues, proper stand health, and/or creating defensible space.
- SAM 2. Trainings for Volunteers (Including all Workshop, Educational Classes, webinars, demonstrations)
- SAM 3. Trainings for Extension Staff (includes webinars, workshops, demonstrations, and group discussions).
- SAM 4. Community Meetings Convened [examples: Advisory Groups, Councils, Coalition Meetings, Boards].
- SAM 5. Direct Communication/Education by telephone and/or e-mail
- SAM 6. Newsletters (This is number of newsletters, not number mailed or number of Coloradoans who received them.)
- SAM 7. Websites (number of Websites, not number of hits)
- SAM 8. Website Hits (number of hits, not number of sites)
- SAM 9. Press/News Release or Column (number submitted)
- WR 1) Trainings/Classes/Workshops, Field Days, Activity Days
- WR 2) Trainings for Extension Staff

- WR 3) Community Meetings Convened [examples: Advisory Groups, Councils, Coalition Meetings, Boards]
- WR 4) Community Meetings Facilitated [examples: Focus Group, Citizen Forum, Round Table Dialogue, Strategic Planning Process]
- WR 5) Direct Communication/Education by telephone and/or e-mail
- WR 6) Newsletters (This is number of newsletters, not number mailed or number of Coloradoans who received them.)
- WR 7) Websites (number of Websites)Can include:Water Quality Interpretation Tool, Anaerobic digestion, decision,Other site
- WR 8) Websites (number of hits)Could include:Water-related fact sheets, Other sites
- WR 9) Press/News Release or Column (number submitted)
- Amount of grant dollars to support natural resource and environmental research
- Clicking this box affirms you will continue to collect data on these items and report the data in the Annual Report of Accomplishments and Results.

V(I). State Defined Outcome

O. No	Outcome Name
1	HORT Home gardeners and green industry professionals report enhanced plant health and more efficient use of labor, water, fertilizer and pesticides when creating and maintaining landscapes
2	NPE 1.1a: Number of land managers and residents who asked for native plants at a local garden center or by mail order.
3	NPE 1.1b: Number of land managers and residents who began or increased planting of natives in a sustainable landscape.
4	NPE 1.2a: Number of land managers and residents who began or increased weed control efforts.
5	NPE 1.1c: Number of acres impacted by planting of natives in a sustainable landscape
6	NPE 1.2b: Number of acres impacted by alien weed control efforts.
7	NPE 1.3a: Number of land managers and residents who left wild native plants to produce seed rather than collecting or picking wildflowers.
8	NPE 1.3b: Number of land managers and residents who stayed on trails to prevent erosion and damage to native plants.
9	NPE 2.1a: Dollar amount saved by residents from their planting of natives in a sustainable landscape.
10	NPE 2.1b: Dollar amount saved by land managers and residents from control of alien weeds.
11	NPE 2.1c: Number of land managers and residents who retained their current job, got a promotion or got a new job as a result of their program participation.
12	SAM 1.1a. The number of small acreage landowners who conducted a well water test.
13	SAM 1.1b. The number of small acreage landowners who report having their septic system checked/pumped
14	SAM 1.2. The number of small acreage landowners who report water conservation by planting drought tolerant plants and/or implementing efficient irrigation techniques.
15	SAM 2.1. The number of small acreage landowners who report implementation of proper manure management including storage, composting, and/or proper disposal.
16	SAM 2.2. The number of small acreage landowners who report utilizing techniques to deter unwanted wildlife.
17	SAM 2.3a. The number of small acreage landowners who report having a plan in place which addresses livestock and animal diet and supplements, emergency veterinary care, emergency evacuation, and death.
18	SAM 2.3b. The number of feed stores who were sent emergency messages from the Animal Health Network or some other system to advise landowners of state veterinary emergency reports.
19	SAM 2.4. The number of small acreage landowners who report successfully attracting pollinators and/or other desired wildlife.
20	SAM 3.1a. The number of small acreage landowners who report implementation of composting and/or vermicomposting.
21	SAM 3.1b. The number of small acreage landowners who utilize soil tests on their property.
22	SAM 3.1c. The number of small acreage landowners who reduced soil erosion by using windbreaks, cover crops, and/or other techniques.
23	SAM 4.1. The number of small acreage landowners who have established a weed management and monitoring plan and/or have reported active management of noxious/ unwanted weeds.
24	SAM 4.2. The number of small acreage landowners who have implemented proper grazing and pasture management.
25	SAM 4.3. The number of small acreage landowners who have successfully established grass.
26	SAM 4.5. The number of small acreage landowners who have identified existing vegetation on their property, including grasses, weeds, forbs, shrubs, and/or trees.
27	SAM 4.4. The number of small acreage landowners who have planted and/or properly maintained windbreaks or snow fences on their property.

28	SAM 4.6a. The number of small acreage landowners who are implementing a forest management plan which includes insect/disease issues, proper stand health, and/or creating defensible space.
29	SAM 4.6b. The number of small acreage landowners who report having an evacuation plan in place in case of wildfire.
30	WR 1.1) Number of participants reporting they Perform water quality sampling and analysis in a manner meaningful to the user and regulating agencies.
31	WR 1.2) Adoption of technology and Best Management Practices (BMPs) that prevent and mitigate the effects of point-source and/or non-point source water pollution.
32	WR 2.1) Adoption of tools, technology, and practices that foster conservation of water or optimization of water use in agriculture settings.
33	Economic impact of the change in behavior reported
34	Change in knowledge
35	Change in condition outcome

Outcome # 1

1. Outcome Target

HORT Home gardeners and green industry professionals report enhanced plant health and more efficient use of labor, water, fertilizer and pesticides when creating and maintaining landscapes

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 111 - Conservation and Efficient Use of Water
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 2

1. Outcome Target

NPE 1.1a: Number of land managers and residents who asked for native plants at a local garden center or by mail order.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water
- 211 - Insects, Mites, and Other Arthropods Affecting Plants
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 3

1. Outcome Target

NPE 1.1b: Number of land managers and residents who began or increased planting of natives in a sustainable landscape.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 4

1. Outcome Target

NPE 1.2a: Number of land managers and residents who began or increased weed control efforts.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 5

1. Outcome Target

NPE 1.1c: Number of acres impacted by planting of natives in a sustainable landscape

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 6

1. Outcome Target

NPE 1.2b: Number of acres impacted by alien weed control efforts.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 7

1. Outcome Target

NPE 1.3a: Number of land managers and residents who left wild native plants to produce seed rather than collecting or picking wildflowers.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 8

1. Outcome Target

NPE 1.3b: Number of land managers and residents who stayed on trails to prevent erosion and damage to native plants.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 9

1. Outcome Target

NPE 2.1a: Dollar amount saved by residents from their planting of natives in a sustainable landscape.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 10

1. Outcome Target

NPE 2.1b: Dollar amount saved by land managers and residents from control of alien weeds.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 11

1. Outcome Target

NPE 2.1c: Number of land managers and residents who retained their current job, got a promotion or got a new job as a result of their program participation.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 12

1. Outcome Target

SAM 1.1a. The number of small acreage landowners who conducted a well water test.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 13

1. Outcome Target

SAM 1.1b. The number of small acreage landowners who report having their septic system checked/pumped

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 112 - Watershed Protection and Management

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 14

1. Outcome Target

SAM 1.2. The number of small acreage landowners who report water conservation by planting drought tolerant plants and/or implementing efficient irrigation techniques.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 15

1. Outcome Target

SAM 2.1. The number of small acreage landowners who report implementation of proper manure management including storage, composting, and/or proper disposal.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 16

1. Outcome Target

SAM 2.2. The number of small acreage landowners who report utilizing techniques to deter unwanted wildlife.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 121 - Management of Range Resources

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 17

1. Outcome Target

SAM 2.3a. The number of small acreage landowners who report having a plan in place which addresses livestock and animal diet and supplements, emergency veterinary care, emergency evacuation, and death.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 601 - Economics of Agricultural Production and Farm Management

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 18

1. Outcome Target

SAM 2.3b. The number of feed stores who were sent emergency messages from the Animal Health Network or some other system to advise landowners of state veterinary emergency reports.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 121 - Management of Range Resources

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 19

1. Outcome Target

SAM 2.4. The number of small acreage landowners who report successfully attracting pollinators and/or other desired wildlife.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 136 - Conservation of Biological Diversity
- 211 - Insects, Mites, and Other Arthropods Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 20

1. Outcome Target

SAM 3.1a. The number of small acreage landowners who report implementation of composting and/or vermicomposting.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 102 - Soil, Plant, Water, Nutrient Relationships
- 403 - Waste Disposal, Recycling, and Reuse

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 21

1. Outcome Target

SAM 3.1b. The number of small acreage landowners who utilize soil tests on their property.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 22

1. Outcome Target

SAM 3.1c. The number of small acreage landowners who reduced soil erosion by using windbreaks, cover crops, and/or other techniques.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 23

1. Outcome Target

SAM 4.1. The number of small acreage landowners who have established a weed management and monitoring plan and/or have reported active management of noxious/ unwanted weeds.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 24

1. Outcome Target

SAM 4.2. The number of small acreage landowners who have implemented proper grazing and pasture management.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 121 - Management of Range Resources

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 25

1. Outcome Target

SAM 4.3. The number of small acreage landowners who have successfully established grass.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 121 - Management of Range Resources

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 26

1. Outcome Target

SAM 4.5. The number of small acreage landowners who have identified existing vegetation on their property, including grasses, weeds, forbs, shrubs, and/or trees.

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 213 - Weeds Affecting Plants

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 27

1. Outcome Target

SAM 4.4. The number of small acreage landowners who have planted and/or properly maintained windbreaks or snow fences on their property.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 121 - Management of Range Resources

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 28

1. Outcome Target

SAM 4.6a. The number of small acreage landowners who are implementing a forest management plan which includes insect/disease issues, proper stand health, and/or creating defensible space.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 123 - Management and Sustainability of Forest Resources

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 29

1. Outcome Target

SAM 4.6b. The number of small acreage landowners who report having an evacuation plan in place in case of wildfire.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 121 - Management of Range Resources
- 123 - Management and Sustainability of Forest Resources
- 124 - Urban Forestry

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 30

1. Outcome Target

WR 1.1) Number of participants reporting they Perform water quality sampling and analysis in a manner meaningful to the user and regulating agencies.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 31

1. Outcome Target

WR 1.2) Adoption of technology and Best Management Practices (BMPs) that prevent and mitigate the effects of point-source and/or non-point source water pollution.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 133 - Pollution Prevention and Mitigation

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 32

1. Outcome Target

WR 2.1) Adoption of tools, technology, and practices that foster conservation of water or optimization of water use in agriculture settings.

2. Outcome Type : Change in Action Outcome Measure

3. Associated Knowledge Area(s)

- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management

4. Associated Institute Type(s)

- 1862 Extension

Outcome # 33

1. Outcome Target

Economic impact of the change in behavior reported

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 103 - Management of Saline and Sodic Soils and Salinity
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 123 - Management and Sustainability of Forest Resources
- 132 - Weather and Climate
- 403 - Waste Disposal, Recycling, and Reuse
- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Research

Outcome # 34

1. Outcome Target

Change in knowledge

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 103 - Management of Saline and Sodic Soils and Salinity
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management

- 121 - Management of Range Resources
- 123 - Management and Sustainability of Forest Resources
- 132 - Weather and Climate
- 403 - Waste Disposal, Recycling, and Reuse
- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Research

Outcome # 35

1. Outcome Target

Change in condition outcome

2. Outcome Type : Change in Knowledge Outcome Measure

3. Associated Knowledge Area(s)

- 101 - Appraisal of Soil Resources
- 102 - Soil, Plant, Water, Nutrient Relationships
- 103 - Management of Saline and Sodic Soils and Salinity
- 111 - Conservation and Efficient Use of Water
- 112 - Watershed Protection and Management
- 121 - Management of Range Resources
- 123 - Management and Sustainability of Forest Resources
- 132 - Weather and Climate
- 403 - Waste Disposal, Recycling, and Reuse
- 605 - Natural Resource and Environmental Economics

4. Associated Institute Type(s)

- 1862 Research

V(J). Planned Program (External Factors)

1. External Factors which may affect Outcomes

- Economy
- Appropriations changes
- Public Policy changes
- Government Regulations

- Competing Public priorities
- Competing Programmatic Challenges
- Populations changes (immigration, new cultural groupings, etc.)

Description

Local, state, and federal funding changes will impact ability to conduct programs. Significant changes in regulatory environment could dramatically alter the scope and goals of both research and extension programs. This is most notable in Colorado with respect to policies affecting use of public lands and both surface and ground water. Both water quantity and water quality are critical issues to the future of agriculture in the semi-arid west. More and more agricultural producers are operating in a market-oriented, individual-responsibility environment, with less reliance on price supports. Producers are moving toward differentiated, consumer-oriented products.

V(K). Planned Program - Planned Evaluation Studies

Description of Planned Evaluation Studies

Regular pre-post evaluations are used. Formative evaluations are often used during programs to adjust focus and direction. Case studies are used to clearly demonstrate impact.